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REMARKS

By the present amendment, independent claim 91 has been amended. Thus, after the present amendment, claims 91-119 remain in the present application. Claims 111-119 have been allowed. Reconsideration and allowance of outstanding claims 91-110 in view of the above amendments and following remarks are requested.

A. Rejections of Claims 91, 95-105, and 107-110

The Examiner has rejected claims 91, 95-105, and 107-110 under 35 USC §103(a) as being obvious with respect to U.S. Patent Number 5,719,750 to Iwane ("Iwane"), U.S. Patent Number 4,446,477 to Currie et al. ("Currie"), and U.S. Patent Number 5,608,261 to Bhattacharyya et al. ("Bhattacharyya"). For the reasons discussed below, Applicants respectfully submit that the present invention, as defined by amended independent claim 91, is patentably distinguishable over Iwane, Currie, and Bhattacharyya.

Amended independent claim 91 includes language indicating that first and second ground planes are integral to a single interconnect substrate and operatively associated with respective first and second active chips and respective first and second discrete components mounted on and situated on the single interconnect substrate, wherein the first ground plane is separated from the second ground plane.

Embodiments according to the present invention provide two separate ground planes that are formed on the same or different metal layers of a single interconnect substrate, where the first ground plane is operatively associated with a first active circuit

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chip and the second ground plane is operatively associated with a second active circuit chip, and where the first and second active circuit chips are situated on the single interconnect substrate.

Advantageously, by providing two separate ground planes associated with respective first and second active circuit chips situated on the single interconnect substrate, the present structure achieves a reduction in the amount of unwanted RF interference between first and second functionally distinct portions of a multiple chip module, where the first and second functionally distinct portions are associated with the respective first and second active circuit chips.

Moreover, the present multiple chip module advantageously can include a number of discrete components, such as capacitors, inductors, resistors, and the like, which can be surface mounted or printed on the surface of the single interconnect substrate. Referring to the present application, page 11, "the use of active circuit chips having multiple and isolated RF functions on a single dielectric substrate can be achieved in a practical and manufacturable product using the split ground plane techniques described [in the present application]."

Furthermore, independent claim 91 has been amended to recite "said first active chip comprising a first portion to perform a first RF and IF function and a second portion to perform a second RF and IF function". Embodiments according to the present invention include only one interconnect substrate 102 advantageously adapted to enable multiple chip module 100 to integrate a plurality of RF and IF functions. Unlike the

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present invention as defined by amended independent claim 91, conventional MCM techniques have not been extended to RF applications (e.g. applications having circuits operating at frequencies greater than approximately 800 MHz) and IF applications (e.g. applications having circuits operating at frequencies between approximately 200 and 800 MHz). Present application, pages 1 and 2.

In contrast, Iwane teaches printed board 10 having ground layers 3a and 3b. Ground layers 3a and 3b are electrically insulated inside printed board 10. By connecting circuits with different characteristics (e.g. low frequency and high frequency characteristics) with the ground layers 3a and 3b, interference of these circuits caused due to a common ground is minimized. However, as the Examiner has correctly stated, Iwane does not disclose a first active circuit chip connected to a single interconnect substrate.

In contrast to the present invention as defined by amended independent claim 91, Iwane does not teach achieving advantageous reduction in the amount of unwanted RF interference between first and second functionally distinct portions of a multiple chip module. Iwane further does not teach the first active chip comprising a first portion to perform a first RF and IF function and a second portion to perform a second RF and IF function. Iwane does not teach active components operatively associated with respective first and second ground planes, where the first and second ground planes are separated ground planes, as specified in amended independent claim 91.

Iwane does not disclose, teach, or suggest the configuration of amended independent claim 91. Furthermore, there is no teaching or suggestion to combine or

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modify Iwane. Therefore, Iwane, singly or in combination with other art of record, does not disclose, teach, or suggest the present invention as defined by amended independent claim 91.

Currie does not cure the deficiencies of Iwane. Currie is directed to a thin film processing substrate that is embodied into a multichip hybrid module. The processing substrate has conductive vias that are arranged in an area array having the same pattern as the lead out pin vias on a base substrate.

The Examiner states that Currie discloses in Figure 4 first active circuit chip 11' wire bonded to a single interconnect substrate. Applicants respectfully disagree. Currie simply teaches chip 11' wire bonded to conductive metal layer 42. Column 5, line 3 and column 6, line 4.

The Examiner states, correctly, that Iwane and Currie do not disclose a second discrete component situated on the single interconnect substrate, as recited in amended independent claim 91. Currie also does not teach the advantages of the present invention as defined by amended independent claim 91. Currie, singly or in combination with other art of record, also does not teach first active chip comprising a first portion to perform a first RF and IF function and a second portion to perform a second RF and IF function.

Currie does not disclose, teach, or suggest the configuration of amended independent claim 91. Furthermore, there is no teaching or suggestion to combine or modify Currie. Therefore, Currie, singly or in combination with other art of record, does

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not disclose, teach, or suggest the present invention as defined by amended independent claim 91.

Furthermore, Bhattacharyya does not cure the deficiencies of Iwane and Currie. Bhattacharyya merely teaches a thermally dissipative IC package that can accommodate large discrete capacitors. The package substrate includes a recessed region on one of its surfaces that is separate from the region where the IC device resides. A discrete capacitor is placed inside the recessed region such that the entire capacitor resides below the surface of the substrate within the recessed region.

The Examiner asserts that Bhattacharyya teaches a second discrete component situated on a single interconnect substrate in Figure 3. Applicants respectfully disagree. Bhattacharyya teaches, in Figure 3, capacitor 23 in a recess underneath package substrate 10 and above metal plate 21.

Bhattacharyya does not disclose, teach, or suggest the configuration of amended independent claim 91. Furthermore, there is no teaching or suggestion to combine or modify Bhattacharyya. Therefore, Bhattacharyya, singly or in combination with other art of record, does not disclose, teach, or suggest the present invention as defined by amended independent claim 91. Furthermore, the fact that the Examiner has acknowledged that as many as three references, as opposed to merely one or two references, are required to allegedly render claim 91 obvious, further indicates that claim 91 was not obvious to a person of ordinary skill in the art at the time the invention was made.

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For the foregoing reasons. Applicants respectfully submit that the present invention as defined by amended independent claim 91 is taught, disclosed, or suggested by the art of record. Thus, amended independent claim 91 is patentably distinguishable over the art of record. As such, the claims depending from amended independent claim 91 are, *a fortiori*, also patentable for at least the reasons presented above and also for additional limitations contained in each dependent claim.

B. Rejections of Claims 92-94 under 35 USC §103(a)

The Examiner has rejected claims 92-94 under 35 USC §103(a) as being obvious with respect to Iwane, Currie, Bhattacharyya, and U.S. Patent Number 6,356,333 to Uchiyama ("Uchiyama"). Applicants respectfully submits that claims 92-94 depend from amended independent claim 91, and thus, claims 92-94 should be allowed at least for the same reasons discussed above in conjunction with patentability of amended independent claim 91.

C. Rejections of Claim 106 under 35 USC §103(a)

The Examiner has rejected claim 106 under 35 USC §103(a) as being obvious with respect to Iwane, Currie, Bhattacharyya, and U.S. Patent Publication Number US 2004/0070024 to Momose et al. ("Momose"). Applicants respectfully submit that claim 106 depends from amended independent claim 91, and thus, claim 106 should be allowed

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at least for the same reasons discussed above in conjunction with patentability of amended independent claim 91.

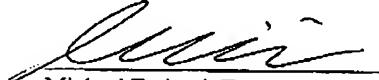
D. Conclusion

Based on the foregoing reasons, the present invention, as defined by amended independent claim 91, and the claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, outstanding claims 91-110 are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance of outstanding claims 91-110, and an early Notice of Allowance directed to all claims 91-119 remaining in the present application are respectfully requested.

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Respectfully Submitted,
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